

of parts, has a relatively simple mechanism, and is inexpensive. Another object of the invention is to provide a chip carrier that facilitates automation of assembling and sharing of test equipment for semiconductor devices and provides high test efficiency, as well as to provide a method of testing a chip using the chip carrier.

According to one aspect of the present invention, a chip carrier comprises a carrier base having an opening and being capable of accommodating a chip inside the opening, and an outer lid for closing the opening of the carrier base. The outer lid is engaged with the carrier base when rotated in a space of the carrier base formed over the opening.

Other and further objects, features and advantages of the invention will appear more fully from the following description.

#### Brief Description of the Drawings

Fig. 1 is a schematic perspective view showing how a chip carrier according to the first embodiment is assembled.

Fig. 2 is a schematic perspective view of an assembled chip carrier according to the first embodiment.

Fig. 3 is a schematic perspective view showing how a carrier base of the chip carrier shown in Fig.1 is assembled.

Fig. 4 is a schematic sectional view of a chip carrier according to the second embodiment.

Figs. 5a and 5b are a schematic top view and bottom view of the outer lid of the chip carrier shown in Fig. 4.

Fig. 6 is a schematic perspective view showing how a chip carrier according to the third embodiment is assembled.

Fig. 7 is a schematic perspective view of a conventional chip carrier.

Fig. 8 is a schematic perspective view showing how another conventional chip carrier is assembled.

#### Detailed Description of the Preferred Embodiments

##### 5 First Embodiment

A first embodiment of the present invention will be hereinafter described in detail with reference to the drawings. Fig. 1 is a schematic perspective view showing how a chip carrier according to the first embodiment is assembled. In Fig. 1,  
10 reference symbol 1 denotes a carrier base for accommodating a chip or the like; 4a denotes an opening of the carrier base 1; 4b denotes erect portions of the carrier base 1; 4c denotes projections of the respective erect portions 4b; 4d denotes inside surfaces of the respective erect portions 4b; 5 denotes  
15 a chip that was cut out of a wafer; 7 denotes an outer lid for closing the opening 4a; 7a denotes a pair of side surfaces of the outer lid 7; 7b denotes recesses in the respective side surfaces 7a; and 8 denotes an inner lid to be accommodated in the carrier base 1.

20 The erect portions 4b of the carrier base 1 are located on both sides of the opening 4a, and the inside surfaces 4d have an arc shape. The opening 4a of the carrier base 1 is larger than the chip 5 so as to be able to accommodate the chip 5, and has approximately the same shape as the inner lid 8 so as  
25 to be able to be fitted with and accommodate the inner lid 8. The pair of side surfaces 7a of the outer lid 7 have an arc shape and are formed with the respective recesses 7b.

In the chip carrier having the above structure, first, the chip 5 is mounted on a contact film 3 in the opening 4a  
30 in the direction indicated by the arrow in Fig. 1. For example, this is done by bringing the bumps of the contact film 3 and

the pads of the chip 5 into register using an optical positioning means.

Then, the inner lid 8 is placed on the chip 5. At this time, the inner lid 8 is accommodated in the opening 4a so as to be fitted therein. Then, the outer lid 7 is placed on the inner lid 8 and is rotated in the space formed between the erect portions 4b in the direction indicated by the arrows in Fig. 1 and is thereby engaged with the carrier base 1.

The inside surfaces 4d of the carrier base 1 and the side surfaces 7a of the outer lid 7 have such arc shapes that the outer lid 7 can fit in the carrier base 1. Therefore, when the outer lid 7 is rotated, the side surfaces 7a of the outer lid 7 slide on the respective inner surfaces 4d of the carrier base 1.

As shown in Fig. 2, the recesses 7b in the side surfaces 7a of the outer lid 7 are engaged with the projections 4c on the inside surface 4d of the carrier base 1, whereby the assembling of the chip carrier is completed. In this state, the outer lid 7 causes, via the inner lid 8, the chip 5 to be pressed against the contact film 3 with proper force.

As shown in Fig. 3, the carrier base 1 is composed of a carrier base bottom portion 6, a resin member 2, the contact film 3, and a carrier base top portion 4. The resin member 2 as a cushion member is fitted into a recess 6a of the carrier base bottom portion 6. The contact film 3 is placed on the resin member 2 and then electrically connected to electrodes 6b of the carrier base bottom portion 6. The carrier base top portion 4 is placed on the contact film 3 and then fixed to the carrier base bottom portion 6 by bonding or the like.

Since the carrier base top portion 4 has a penetration opening 4a, the contact film 3 is exposed to the outside through the opening 4a of the carrier base 1 assembled.